Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

Claim 1. (original) A system for producing extremely small metal spherical particles of high uniform size and high sphericty comprising:

a granulation chamber being gas substantially tight and having an upper end and a lower end;

means for collecting produced particles at the lower end of the chamber with a particle conduit means for delivering produced particles from the chamber;

conduit means for delivering molten metal through said granulation chamber upper end, said conduit means protruding through the chamber upper end so that said protruding conduit means is directed down toward the interior of the chamber;

a heated vessel being substantially gas tight and adapted for melting metal starting materials and which connects to said molten metal conduit means, allowing the flow of molten metal from the heated vessel through said molten metal conduit means;

a rotating disk located beneath said protruding molten metal conduit means which disperses molten metal that drops upon said disk from said protruding molten metal conduit means to form tiny dispersed droplets;

an atmosphere of predetermined gases in said granulation chamber and said heated vessel;

ejector means for ejecting cooling gas within a predetermined radius of said rotating disk to cool said dispersed metal droplets into solidified metal spheres.

Claim 2. (original) The system of claim 1 which further includes controlling means for regulating gas pressure in said heated vessel.

Claim 3. (original) The system of claim 1 which further includes controlling means for regulating gas pressure in said granulation chamber.

Claim 4. (original) The system of claim 1 which further includes controlling means for regulating gas pressure within said dispersion space.

Claim 5. (original) The system of claim 1 wherein the granulation chamber is cylindrical in shape.

Claim 6. (original) The system of claim 1 wherein the upper end of said granulation chamber is open and said apparatus further includes sealing means to close the upper end of said chamber.

Claim 7. (original) The system of claim 1 wherein said rotating disk is dish shaped.

Claim 8. (original) The system of claim 1 wherein said rotating disk is mounted on elevation adjustment means for moving the disk up and down.

Claim 9. (original) The system of claim 1 wherein the particle conduit means delivers produced particles from the chamber to a sizing means for filtering particles by diameter.

Claim 10. (original) The system of claim 9 wherein the sizing filter is a screening apparatus.

Claim 11. (original) The system of claim 1 wherein said ejection of cooling gas within a predetermined radius of said rotating disk is within a predetermined radius of the centrifugal field of the rotating disk within which the molten droplets form into spherical particles.

Claim 12. (original) The system of claim 1 wherein said rotating disk is cone shaped.

Claim 13. (original) The system of claim 1 wherein said rotating disk is a substantially flat disk.

Claim 14. (original) The system of claim 1 wherein said disk is 30-50 mm in diameter.

Claim 15. (original) The system of claim 7 wherein said dish has a depth of 10-18% of the diameter of the dish.

Claim 16. (original) The system of claim 1 further including storing means for holding gases that comprise the gases in said heated vessel, said granulation chamber and said cooling gas.

Claim 17. (original) The system of claim 16 further including gas flow control means for separately regulating the flow of gas from said gas storing means into said heated vessel, said granulation chamber and said cooling gas ejector means.

Claim 18. (original) The system of claim 1 further including gas pressure control means for separately regulating the pressure of gas in said heated vessel, said granulation chamber and said cooling gas ejector means.

Claim 19. (original) The system of claim 18 wherein said gas pressure control means are vacuum pumps.

Claim 20. (original) A process for producing extremely small metal spherical particles of high uniform size and high sphericty comprising the following steps:

melting metal starting materials;

dispersing said molten metal starting materials into tiny spherical droplets by directing the molten metal upon a rotating disk;

cooling said dispersed metal droplets by directing a cooling-reaction gas to contact the dispersed metal spherical droplets and thus solidify the droplets into tiny spherical particles and form an anti-adhesion coating on the particles.

Claim 21. (original) The process of claim 20 wherein said metal starting materials are selected from the group consisting of Fe, Ni, Sn, Ti, Cu and Ag.

Claim 22. (original) The process of claim 20 wherein said metal starting materials are alloys selected from the group consisting of Ni-Al, Sn-Ag-Cu, Al-Ni-Co-Fe and R-Fe-B where R = rare earth metal.

Claim 23. (original) The process of claim 22, wherein said rare earth metal is Nd or Pr.

Claim 24. (original) The process of claim 20, wherein said starting materials are selected from the group consisting of Ag, Cu, Ni, Al, Ti, V, Nb, Cr, Mo, Mn, Fe, B, Ru, Co, Pd, Pt, Au, Zn, Cd, Ga, In, Ti, Ge, Sn, Pb, Sb, Bi, Ce, Pr and Nd.

Claim 25. (original) The process of claim 20, wherein the melting of metal occurs under an atmosphere of a predetermined gas mixture of one or more inert gas and oxidizing gas.

Claim 26. (original) The process of claim 20, wherein the dispersing of molten metal occurs under an atmosphere of a predetermined gas mixture of one or more inert gas and oxidizing gas.

Claim 27. (original) The process of claim 20, wherein the cooling of dispersed molten droplets is composed of a predetermined cooling-reaction gas mixture of one or more inert gas and oxidizing gas.

Claim 28. (original) The process of claim 20 wherein the rotating disk rotates at a speed of 50,000 to 100,000 rpm.

Claim 29. (original) A process for producing extremely small metal spherical particles having a crystalline composition and of high uniform size and high sphericty, comprising the following steps:

melting metal starting materials;

dispersing said molten metal starting materials into tiny spherical droplets by directing the molten metal upon a rotating disk, wherein the surrounding atmosphere has a concentration of 0.3 to 0.7 ppm oxygen ;

cooling said dispersed metal droplets by directing a cooling-reaction gas to contact the dispersed metal spherical droplets and thus solidify the droplets into tiny spherical particles and form an anti-adhesion coating on the particles.

Claim 30. (original) The process of claim 29 wherein the dispersing of said molten material into droplets occurs in a surrounding temperature of 10-150°C.

Claim 31. (original) The process of claim 29 wherein the dispersing of said molten material into droplets occurs in a degree of vacuum that is –0.04Mpa.

Claim 32. (original) The process of claim 29 wherein the dispersing of said molten material into droplets occurs in a gas atmosphere of Ar further containing 0.3 to 0.7 ppm oxygen.

Claim 33. (original) The process of claim 29 wherein the cooling of said dispersed droplets, the cooling gas is ejected with a flow rate of 1L/min ±10%.

Claim 34. (original) The process of claim 29 wherein the cooling-reaction gas contains Ar and 0.8-1.2 ppm oxygen.

Claim 35. (original) The process of claim 29 wherein the cooling-reaction gas has a gas pressure of 0.5MPa ±10%.

Claim 36. (original) The process of claim 29 wherein the temperature of said cooling-reaction gas is 10-30°C.

Claim 37. (original) The process of claim 29 wherein the dispersing of said molten metal, the gas pressure is –0.06 to –0.02MPa.

Claim 38. (original) The process of claim 29 wherein the dispersing of said molten metal, the external gas pressure at the periphery of the dispersed droplets is atmospheric, 14.696 psi ± 1%). .

Claim 39. (original) A process for producing extremely small metal spherical particles having an amorphous composition and of high uniform size and high sphericty, comprising the following steps:

melting metal starting materials;

dispersing said molten metal starting materials into tiny spherical droplets by directing the molten metal upon a rotating disk, wherein the surrounding atmosphere has a temperature of 10-30°C;

cooling said dispersed metal droplets by directing a cooling-reaction gas to contact the dispersed metal spherical droplets and thus solidify the droplets into tiny spherical particles and form an anti-adhesion coating on the particles.

Claim 40. (original) The process of claim 39 wherein the dispersing of said molten material into droplets occurs in a degree of vacuum that is –0.05Mpa.

Claim 41. (original) The process of claim 39 wherein the dispersing of said molten material into droplets occurs in a gas atmosphere of Ar, further containing 180 to 220 ppm helium and 0.3 to 0.7 ppm oxygen.

Claim 42. (original) The process of claim 39 wherein the cooling of said dispersed droplets, the cooling gas is ejected with a flow rate of 3L/min ±10%.

Claim 43. (original) The process of claim 39 wherein the cooling-reaction gas contains Ar, further containing 180 to 220 ppm helium and 0.8-1.2 ppm oxygen.

Claim 44. (original) The process of claim 39 wherein the cooling-reaction gas has a gas pressure of 0.5MPa ±10%.

Claim 45. (original) The process of claim 39 wherein the temperature of said cooling-reaction gas is 10-30°C.

Claim 46. (original) The process of claim 39 wherein the dispersing of said molten metal, the gas pressure is –0.06 to –0.02MPa.

Claim 47. (original) The process of claim 39 wherein the dispersing of said molten metal, the external gas pressure at the periphery of the dispersed droplets is about atmospheric, 14.696 psi ± 1%.

Claim 48. (original) A process for producing extremely small metal spherical particles having a porous composition and of high uniform size and high sphericty, comprising the following steps:

melting metal starting materials;

dispersing said molten metal starting materials into tiny spherical droplets by directing the molten metal upon a rotating disk, wherein the surrounding atmosphere has a concentration of 0.8 to 1.2 ppm oxygen ;

cooling said dispersed metal droplets by directing a cooling-reaction gas to contact the dispersed metal spherical droplets and thus solidify the droplets into tiny spherical particles and form an anti-adhesion coating on the particles.

Claim 49. (original) The process of claim 48 wherein the dispersing of said molten material into droplets occurs in a surrounding temperature of 10-150°C.

Claim 50. (original) The process of claim 48 wherein the dispersing of said molten material into droplets occurs in a degree of vacuum that is about atmospheric pressure, 14.696 psi ± 1%.

Claim 51. (original) The process of claim 48 wherein the dispersing of said molten material into droplets occurs in a gas atmosphere of Ar further containing 0.8 to 1.2 ppm oxygen.

Claim 52. (original) The process of claim 48 wherein the cooling of said dispersed droplets, the cooling gas is ejected with a flow rate of 1L/min ±10%.

Claim 53. (original) The process of claim 48 wherein the cooling-reaction gas contains Ar and 0.8-1.2 ppm oxygen.

Claim 54. (original) The process of claim 48 wherein the cooling-reaction gas has a gas pressure of 0.5MPa ±10%.

Claim 55. (original) The process of claim 48 wherein the temperature of said cooling-reaction gas is 10-30°C.

Claim 56. (original) The process of claim 48 wherein the dispersing of said molten metal, the gas pressure is about atmospheric, 14.696 psi ± 1%.

Claim 57. (original) The process of claim 48 wherein the dispersing of said molten metal, the external gas pressure at the periphery of the dispersed droplets is +0.01 to +0.03MPa. .

Claim 58. (currently amended) Spherical particles comprising a crystalline, ~~amorphous or porous~~ composition, having a size of 1-300 μm ~~±1%~~ with a uniformity of size being ≤60-70% and a precise spherical shape of less than or equal to ±10% , wherein the crystalline composition comprises a nanocomposite of the formula $Nd_2Fe_{14}B$-NdO_x , where x = 1-3.

Claim 59. (cancelled) The spherical particles of claim 58 wherein the crystalline composition comprises a nanocomposite of the formulas, RFeB or RFeCoB or $R^1_{2-x}R^2_xFe_{bal}.Co_yM_z$, each further having the inclusion of one of more rare earth oxides, RO_w,

where R is one or more of the rare earth elements selected from the group consisting of La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu,

M is a minor metal element selected from the group consisting of Ba, Ca, Mg, Sr, Be, Bi, Cd, Co, Ga, Ge, Hf, In, B, Si, Mn, Mo, Re, Se, Ta, Nb, Te, Tl, Ti, W, Zr and V),

w=1-3

x=0-0.3,

y=0-0.3, and

z=0-0.1.

Claim 60. (cancelled) The spherical particles of claim 59, wherein the nanocomposite has the formula of $Nd_2Fe_{14}B$-NdO_x , where x = 1-3.

Claim 61. (cancelled) The spherical partiles of claim 59, wherein the nanocomposite has the formula of $Nd_{2-x}Pr_xFe_{bal}.Co_yB_z$, further including NdO_w and/or Pr_w, where w=1-3, x=0-0.3, y=0-0.3 and z=0-0.1.

Claim 62. (cancelled) The spherical particles of claim 58 wherein the amorphous and/or porous composition comprises one or more metals selected from the group consisting of Ag, Cu, Ni, Al, Ti, V, Nb, Cr, Mo, Mn, Fe, B, Ru, Co, Pd, Pt, Au, Zn, Cd, Ga, In, Ti, Ge, Sn, Pb, Sb, Bi, Ce, Pr and Nd.

Claim 63. (cancelled) The spherical particles of claim 58 wherein the amorphous and/or porous composition comprises one of more metals selected from the group consisting of Fe, Ni, Sn, Ti, Cu and Ag.

Claim 64. (cancelled) The spherical particles of claim 58 wherein the amorphous and/or porous composition comprises one of more metal alloys selected from the group consisting of Ni-Al, Sn-Ag-Cu, B-Fe-Nd and Al-Ni-Co-Fe.

Claim 65. (new) Spherical particles comprising a crystalline composition, having a size of 1-300 μm with a uniformity of size being ≤ 60-70% and a precise spherical shape of less than or equal to ±10%, wherein the crystalline composition comprises a nanocomposite having the formula of $Nd_{2-x}Pr_xFe_{bal}.Co_yB_z$, further including NdO_w and/or PrO_w, where w=1-3, x=0-0.3, y=0-0.3 and z=0-0.1.

Claim 66. (new) Spherical particles comprising a crystalline composition having a size of 1-300 μm and precise spherical shape of less than or equal to ±10%, wherein the crystalline composition comprises a nanocomposite structure of metals including an aggregate of nano-sized metal components separated within the particles by layers or discrete nano-sized bodies having composition selected from the group consisting of metal oxides, metal nitrides and metal silicides.